

FLORIDA HIGHWAYS

Vol. IV

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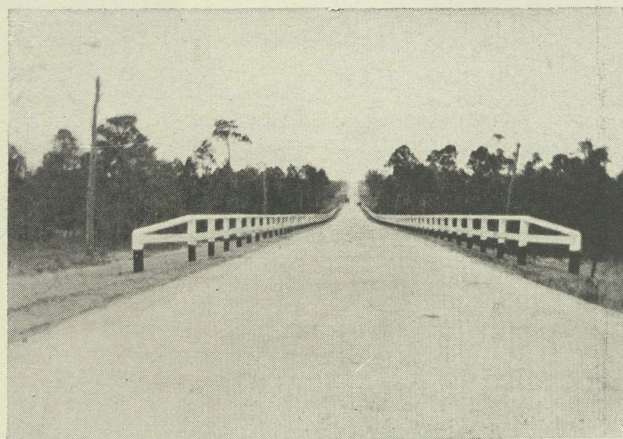
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Project 660, Clay County, Leaving Green Cove Springs for Palatka on Oak Ridge Avenue. Rock Base, Surface-Treated.

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State Road Number Three

By the Editor, with the Assistance of the Office Engineer.

Continuing our recently announced policy of emphasizing in each of the next several issues, some one of the roads in the preferential or primary system of roads of the State, we come in natural sequence to State Road No. 3, one of the shorter of the roads in the primary system. Comparatively short it may be, but its inclusion in the primary or preferential system is amply justified by its importance, as will be seen.

The views which we present with this issue will be found to deal exclusively with views on and along State Road No. 3.

The Route and Location.

Chapter 10269, Laws of Florida, 1925, which declares, designates and establishes the State Road System, defines State Road No. 3 as follows:

"Road No. 3. Extending from the Georgia State line at a point on the St. Mary's River known as Wild's Landing to Orlando, via Jacksonville, Orange Park, Green Cove Springs, Palatka, East Palatka, Crescent City, DeLand and Sanford."

The total length of the road from the Georgia State line to Orlando is 193 miles. It is an interstate road, being a link between Jacksonville and the Georgia State line in what is popularly known as the Atlantic Coastal Highway, and South of Jacksonville to its terminus it has been called The St. John's River Scenic Highway, because for much of its distance it meanders or follows the general course of that stream towards its source. Its great importance is seen in the fact that it offers a natural di-

vergence of traffic originating along the Atlantic Seaboard to central and southwest Florida, as well as a direct connection with Road 4, the East Coast highway. It seems logical to predict that when the Atlantic Coastal Highway shall have been completed, this road will carry the major portion of the seaboard traffic from and to central, south and southwest Florida, as well as to the cities and tourist resorts of Florida's East Coast. From Jacksonville, the Atlantic Coastal Highway runs south over State Road No. 4, down the East Coast, but State Road No. 3 proceeds along its lovely way to its terminus, offering by the way many opportunities for divergence to other cities and points in the State.

We have so far in this series employed so many expressions to indicate the beauty of particular routes, that we are fearful of being accused of seeing these roads through prejudiced eyes. But to deny to Road 3 its claim to matchless beauty would be to dispute the physical evidence offered by the many views presented in this issue. Perhaps we would do wisely, in the remainder of this series, to take the beauty of the roads for granted, and avoiding all attempt at description, to present views which will speak more eloquently than ever we could, of all that Florida has to offer the tourist in the way of scenic beauty. Merely to indicate, as we have, the routing of the road, will suggest to anyone acquainted with Florida the beauty which one encounters, tropical beauty, beauty of stream and lake and flowers and trees and shrubs.



Curb and Gutter Section in DeLeon Springs.

Rivers

Great streams are traversed by this road, the first being, of course, the St. Mary's, the boundary line between the States of Georgia and Florida. Here, as project 421, the two states, with the assistance of the Federal Government have erected a magnificent bridge which gives easy access to Florida, and promise of the splendid roads to be encountered on a tour of the State. Next, the road spans the Nassau River, and the State plans to build a causeway and bridge across the river and contiguous swamp on an entirely new location. Then comes the St. Johns, which is crossed by the road at Palatka and Sanford, an arm, McGirts Creek, being also crossed just south of Jacksonville, and a tributary, Trout River, being spanned north of Jacksonville. At Sanford, where the St. Johns widens and becomes for the moment Monroe Lake, the State is planning the construction of a new bridge. Bridges across Black Creek and Governor's Creek are in fact crossings of arms of the same river.

Lakes

To write of lakes in this section is, we have found, fraught with danger. So many and so beautiful are the lakes which dot this country, that one hardly dares attempt enumeration for fear of inadvertently omitting some beautiful sheet of water. Besides Lake Monroe mentioned above, another great lake of sparkling beauty, an inland sea, is Crescent Lake, which is encountered at Crescent City, while in Orange county entering Orlando, the metropolis of central Florida, the road winds between lakes of shimmering loveliness.

Present Status

And now we come to the prosaic topic of the present status of the road as regards its stage of completion—prosaic in the sense that it must deal in part with cold figures, but interesting none the

less in the viewpoint that it relates to the phase for which the State Road Department exists, that of covering Florida with high-grade, modern, permanent roads. The bare figures show that there are on this road at the present time, besides the paved road in Duval County, which was constructed by that county, the following: 11.52 miles of concrete; 88.85 miles of surface-treated lime rock base, 12.80 miles of bituminous macadam, 2.34 miles of sheet asphalt and 27.50 miles at present under construction, while there are only 3.88 miles which have not yet been let. The bridge work is as follows: Across St. Mary's River, 560 feet concrete and steel; Doctor's Lake, 1,400 feet of the same type; Black Creek, 1,600 feet of concrete and steel, and Governor's Creek, 225 feet of similar construction. In addition the State is planning to construct new bridges of a permanent type across Dunn's Creek and Rice Creek as well as across Lake Monroe (St. John's River) at Sanford and across Nassau River and marsh, as has already been pointed out.

So much for cold statistics. In parlance which appeals to the traveler we find that the status of the road is better expressed in the following manner: From the Georgia State line south via Yulee there is a little more than 11 miles of concrete. For the next 31½ miles across Nassau Marsh rock base surface-treated is encountered. We then come to the Duval County line, and as we have already indicated, the whole stretch of road No. 3 in that county has been constructed and paved by the county. In Clay County the portion from the Duval County line to Green Cove Springs is under construction as a rock-base, surface-treated road, while from the latter point through Palatka to Sanford the paving, the greater part surface-treated lime

rock base, has been completed. From Sanford to Maitland the road is under construction as a bituminous macadam project, while from Maitland to Orlando, the terminus, contract has not yet been let.

Thus it will be seen that the construction of this important interstate highway has been entirely taken care of with the exception of the bridges above mentioned, and the $3\frac{1}{2}$ miles from Maitland to Orlando. As to the latter, the Department is planning immediate construction as soon as certain matters of right of way are smoothed out. Meanwhile, the whole road is open to traffic, and it furnishes the means for the great traffic which plies between Orlando and Jacksonville, as well as the local and interstate traffic.

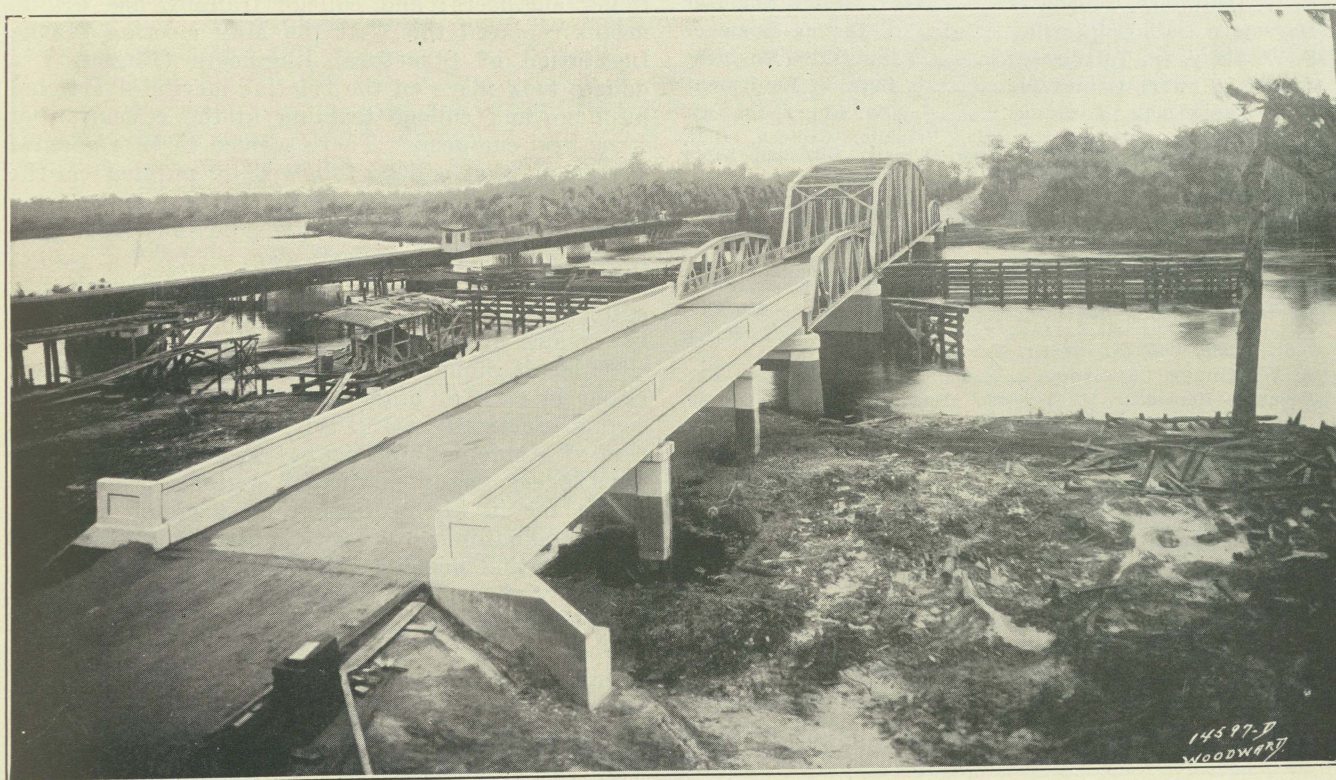
There is an appeal and a fascination about this Road 3 which cannot be described, but which is readily appreciated by everyone who journeys over its route. Tropical vegetation, flowers, shrubs, stately palmettoes and palms, lake and stream conspire to make it a rare journey. It is, in more than the strictly utilitarian sense, one of the great highways in Florida's system, a road which may joyously hold up its head with its sister roads of the primary system.

MOTOR TOURISTS.

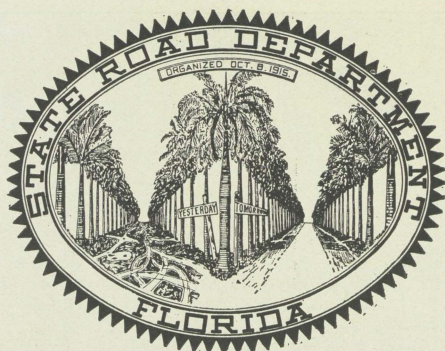
During the month of July, 6,324 "out-of-State licensed" automobiles carried 26,319 motor tourists into Florida over the Jacksonville-St. Johns River bridge at Jacksonville. This is nearly double the number of motor tourist travelers who entered Florida through this gateway into the lower part of the State in July, 1926, and is a substantial increase over each of the preceding months of April, May and June of this year.—Manufacturers Record.



Road 3, Two Miles North of DeLand.



Project 421, St. Mary's River Bridge, Road 3.



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ORANGE COUNTY, WE APOLOGIZE.

Last month, in connection with State Road No. 2, we wrote a paragraph about lakes. We mentioned the beautiful lakes which abound along this road in Columbia, Alachua, Marion, Polk and Osceola counties, and WE MADE NO MENTION WHATEVER OF THE NUMBER AND MATCHLESS BEAUTY OF THE LAKES OF ORANGE COUNTY.

Inadvertence? Of course, it was! And yet, we confess that this does not and cannot excuse the injustice which was done to that great county. On page 9 of the self-same issue we presented a view of one of the glorious lakes of Orange, which must plead for us that we were not intentional in our omission. The fact is, as we had occasion to write a friend in that county, if we had been asked about the article without having it before us, we would have been willing to swear that Orange County was included, so strongly were the lakes of that county impressed upon our mind.

As a matter of course, those who have been in Orange County anywhere would know how many and how wonderful are its lakes. If one went only to Orlando, he could not fail to be impressed with the lake views, but our apology must reach to those who have not had the privilege of a visit to that magnificent section.

Orange County, we apologize, and hiding our head in shame we sign our own name to this apology, in token that the writer, and only the writer, is responsible, and he is very humble in his abasement.

B. A. MEGINNISS.

EDUCATION OF ENGINEERS.

Until comparatively recent years English engineers obtained their education almost exclusively by serving as apprentices or "articled pupils" to practicing engineers; and college training has by no means replaced this. At the May meeting of the Institution of Structural Engineers (England) a debate took place on the relative merits of articled pupilage and college training in the education of structural engineers. There seemed to be a general agreement that college followed by pupilage is the ideal plan, but few can afford the time and money involved. As between the two, possibly the arguments favored the pupilage plan.

Commenting on the subject, "The Surveyor" says editorially: "For municipal engineers, we regard experience in practical work as an absolute necessity; but it should be supplemented by preparation, either in class or otherwise, for an examination of such a practically useful type as that of the Institution of Municipal and County Engineers. In these days, every young municipal engineer who wishes to go far in his profession must supplement his office and outdoor work with study of the theoretical and scientific principles upon which that work is based."

Speaking along the same lines in a presidential address before the Society of Engineers (England), Douglas C. Fidler said in February, referring to correspondence on the subject in one of the professional papers:

(Continued on page 18)



Project 660, Clay County. Approach to Green Cove Springs on Oak Ridge Avenue.

Florida's Rapid Economic Recovery

To those who are not fully acquainted with the inherent possibilities of Florida, the rapid economic recovery it is making following the collapse of the speculative real estate period is amazing. "Florida was down, but it was never out," paraphrasing the Salvation Army slogan, and it had in its natural advantages full power to "come back." In editorially representing the case of Florida, in which the administrative record of Governor John W. Martin was discussed, the Mobile (Ala.) Register said:

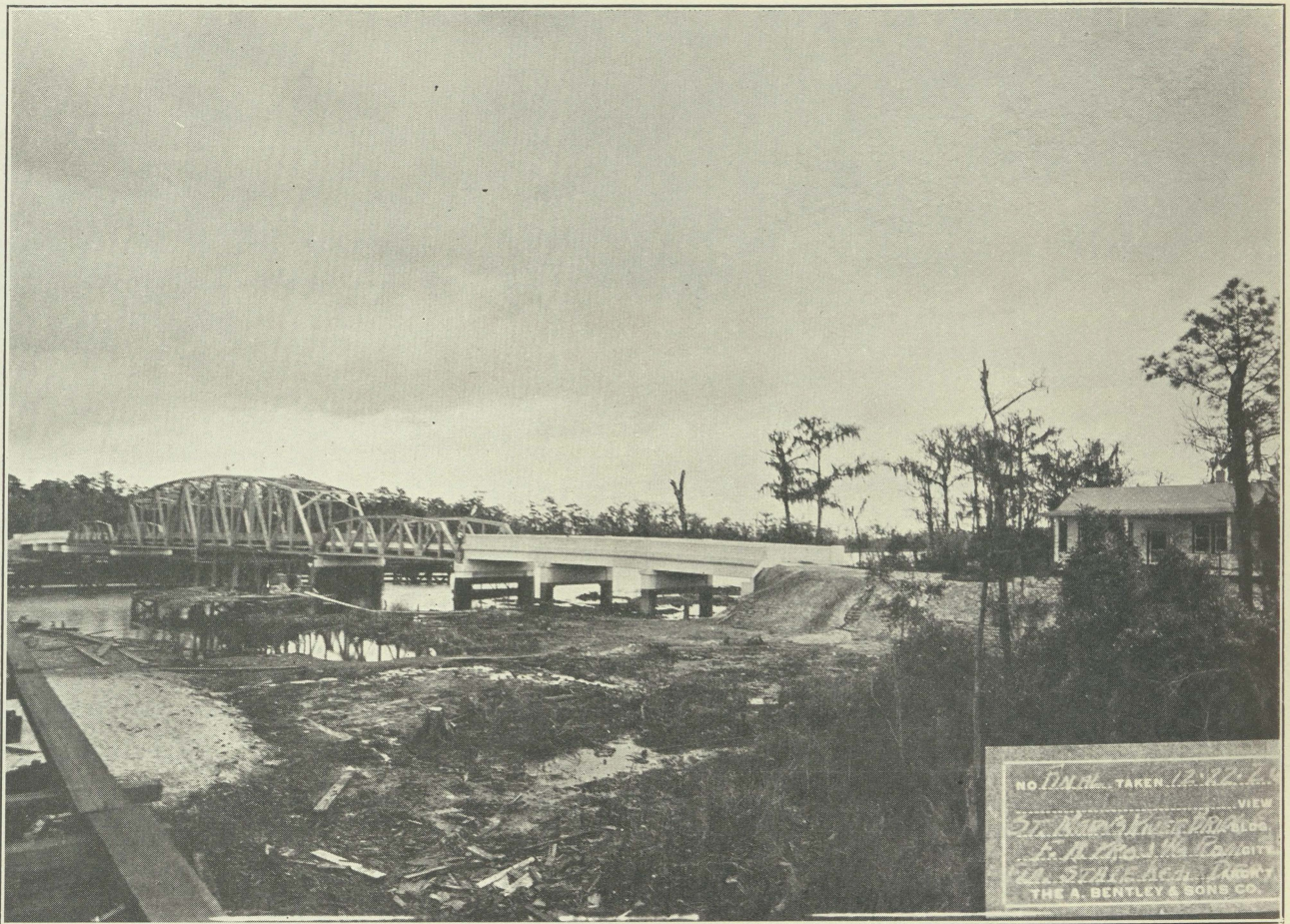
"Governor Martin has accomplished much at a time when Florida was in a state of partial collapse in an economic sense, when banks were toppling and when other unquiet factors were weighing heavily upon the Commonwealth. Florida's recovery from a boom crash is a rather remarkable fact in the history of American States, and is something to the credit of the Governor of Florida that he had some part in making this recovery possible."

Governor Martin reminds us that the State does not owe a cent and has \$14,000,000 in the treasury. And this record has been made in spite of the collapse of the boom and in the face of the advancement made in public improvements in recent years. The great potential farm area of the Everglades is being reclaimed, progress has been made in public educational work at a time when the economic condition and the rapid increase of population brought about a chaotic situation, and highway and other public construction was carried forward at a remarkable rate.

In this connection, F. W. Berry, Jr., office engineer of the State Road Department, informs the Manufacturers Record that during 1926 contracts were let for 605 miles of road and 9276 feet of

bridges, at a contract cost of \$11,226,958. The total expenditure of the department, including contract work, engineering, payrolls and administration, was \$13,695,592, and this is separate from county highway work. The State road department awarded contracts for 441 miles of road and 6875 feet of bridges, at a total cost of \$8,493,565, during the first six months of 1927, or an aggregate contract cost this year, up to August 22, of \$12,347,117. Total State and County highway expenditures this year will approximate \$27,000,000. Highway work of such scope clearly indicates that the authorities of Florida are alert to the situation and are preparing for a greater development of the State.

Neither have the railroads halted with their plans for extensions and improvements. The Frisco System, for instance, has continued to push the rebuilding of its line from Kimbrough, Ala., down to Pensacola, Fla., 143 miles, and also to pursue rapid construction of its connecting line from Aberdeen, Miss., to Kimbrough, much of which will be ready for traffic this fall. Then, the Atlantic Coast Line has only lately completed its important connection from Monticello to Perry, Fla., 40 miles, in addition to following up the construction of extensions from Thonotosassa to Dade City and from Immokalee to Deep Lake, both in Florida. The Seaboard Air Line is continuing its extension work at two other places down the west coast of the State and the Florida East Coast Railway is pursuing the construction of an extension of its Kissimmee Valley division beyond Lake Okeechobee toward Miami. It must also be observed that the Seaboard Air Line has other extension plans, in addition to those mentioned, for



Project 421. Bridge Over St. Mary's River.

the purpose of connecting certain lines for the advantage of through traffic.

General building contracts awarded in Florida during the first seven months of 1927 had a total valuation of approximately \$85,000,000, which is slightly more than half of the amount reported for the corresponding period of the wildest boom days, but nevertheless it is more than the aggregate value of building contracts awarded for the whole of 1924. It must also be considered that the contracts let in the past six months for construction will be carried out, whereas, following the collapse of 1926, the cancellation of many contracts, even on work under way, was heavy.

The magnitude and substantiality of Florida's building operations at present are outlined in the following review of some of the major projects under way and proposed:

Florida Portland Cement Company, completing \$5,000,000 plant at Tampa.

Putnam Lumber Company, Jacksonville, building two plants near Cross City, Fla., at a cost of \$1,500,000.

Gulf Power Company, going forward with a \$3,000,000 expansion program.

Miami is spending \$2,370,000 on harbor improvements.

In West Palm Beach municipal and general improvement work costing \$8,000,000 is under way.

Hollywood's harbor, costing \$6,000,000, is under way.

Jacksonville is spending \$2,000,000 for power plant expansion.

At Clewiston, the Celotex Company interests of Chicago are planting sugar cane on a big scale, and will soon begin the erection of a large mill. Upon its completion, an insulating board plant is to be erected to use the bagasse.

The Brown interests of Portland, Maine, are going ahead with the development of a big acreage in the Everglades for the growing of peanuts.

The Putnam Memorial Bridge over the St. Johns River will be completed in November, 1927.

The Linde Air Products Company plans a \$500,000 plant at Tampa.

Work is progressing on the \$3,500,000 courthouse at Miami.

Contracts were recently let for the St. Andrews Bay bridges, to cost \$1,800,000.

Johnson, Drake & Piper plan a \$3,000,000 bridge across Pensacola Bay.

The Brown-Florida Lumber Company recently completed a big plant at Caryville.

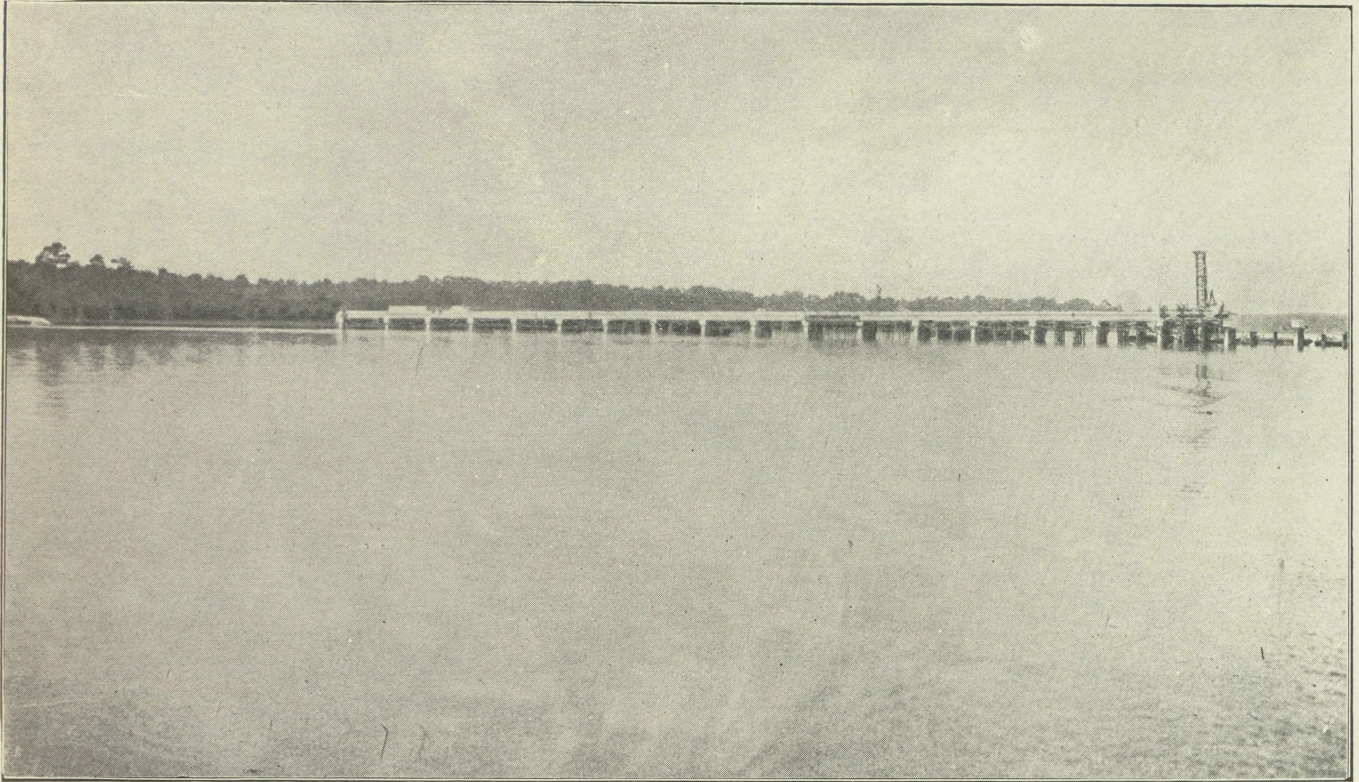
St. Petersburg completed a \$350,000 sewerage system in July, 1927.

The First Baptist Church, Miami, is erecting a \$750,000 building.

The \$500,000 Halifax District Hospital in Daytona Beach is nearing completion.

Coral Gables recently let contracts for a \$250,000 convention hall.

A \$500,000 municipal auditorium for Miami is proposed.



Doctor's Lake Bridge, Looking West.

The \$1,000,000 Manatee River bridge from Bradenton to Palmetto has been completed.

A \$600,000 Medical Arts Building is being built at Jacksonville.

The Seybold Baking Company, Miami, recently completed a big plant.

Volusia county is building a \$350,000 courthouse at Deland.

A \$1,000,000 residence is being erected for James P. Donahue, New York City, at Palm Beach.

A \$1,250,000 municipal hospital is under construction at Tampa, on Davis Islands.

St. Vincent's Hospital, Jacksonville, is being built at a cost of \$1,000,000.

Sisters of the Holy Name of Jesus and Mary, Tampa, are erecting a \$650,000 convent.

Miami Athletic Club completed \$1,000,000 club building.

Dade County Board of Public Instruction, Miami, let contract in February for \$1,000,000 senior high school.

A \$1,500,000 hotel on Longboat Key, Sarasota, is nearing completion for Sarasota Ritz-Carlton Hotel Company.

A \$900,000 Dade county agricultural high school is being built at Lemon City.

The Florida Public Service Company is paying out this year \$5,000,000 for expansion of its facilities.

The Florida Power & Light Co., after spending \$15,000,000 in 1925, appropriated \$35,000,000 for expenditure during 1926 and 1927. The company bought a 40-acre site on Bay Marble Harbor, Hollywood, for a pier and fuel oil handling plant.

The Florida Power Corporation recently completed a 25,000-k.w. station near Inglis on the Withlachoochee River.

A Roman Catholic church, costing about \$200,000, is under construction at Daytona Beach, and many other churches are being built at other points.

During the first six months of this year, 665 issues of public improvement bonds, with a par value of \$261,456,000, were marketed in the 16 Southern States. Sales of Florida bonds amounted to \$70,445,000, representing 158 issues, placing the State ahead of all others in the South. The Florida sales included 57 miscellaneous issues, amounting to \$32,762,000; 58 issues for road and street work, aggregating \$18,868,500; 34 school bond issues, par value of \$4,929,500, and nine for sewer, drainage, water work and similar work, totaling \$13,885,000.

All of which shows conclusively that Florida is continuing to expand its housing and equipment facilities, and is laying a substantial foundation for future growth.

Following construction operations, the banking resources of Florida help to picture its present economic position. In a summary published in the August issue of "The Florida Banker," Jacksonville, Sidney A. Linnekin makes a comparison of Florida's financial structure as indicative of the standing of all the banks, based on 24 of the more important business centers of the State, which show that for these financial centers the banking capital, surplus and profits of June 30, 1927, amounted to \$27,689,125, as compared with \$23,061,520 on December 31, 1925, and \$15,753,684 on June 30, 1924.

Postal receipts are also another indicator of general business conditions, as business activity in a community is reflected in increased postal receipts. J. T. Stovall, Montgomery, Ala., recently made a comparison of postmasters' salaries, which are based on the percentage of receipts of each postoffice, with



Project 421—St. Mary's River Bridge, Road 3, During Construction—View of Swing Span. This Bridge Connects Georgia and Florida on the Coastal Highway.

the same salaries paid the previous year and submits the following:

"In 1926 there were 239 Presidential postoffices in Florida; 22 were raised to that class in that year, one was reduced to fourth class, 10 offices were reduced in salary, 69 offices remained at the same salary, 62 offices were raised \$100 per annum in salary, 47 were raised \$200, 16 were raised \$300, 12 were raised \$400, four were raised \$500, one was raised \$600, one \$800 and one \$1500 per annum.

"The 1927 annual postal guide embraces the time from July, 1926, to July 1, 1927. That takes in a goodly portion of the time that the reaction of the collapse of the boom was at its worst; also the period of the disastrous tornado which damaged Miami and a portion of lower Florida. Notwithstanding this, we find that Florida has apparently not only not suffered any loss in postal receipts, but has actually increased them."

Standing of Florida postoffice, 1927, based on postmasters' salaries:

	No.	Percent
Presidential offices	255
Raised from fourth class	25	9.8
Reduced to fourth class	3
Not changed in salary	74	29.02
Raised \$100	95	37.25
Raised \$200	28	10.98
Raised \$300	9	3.50
Raised \$400	5	1.96
Raised \$500	1
Raised \$1200	1

That Florida is still a Mecca for tourists is shown by the increasing number of motorists to the State during the past few months. Analyzing one principal motor tourist gateway into Florida, one finds that motorists are entering the State in steadily growing numbers, based on the statement of motor vehicles (other than Florida) and passengers passing southward over the Jacksonville-St. John's River bridge at Jacksonville. For the seven months ending July, 1927, there passed into central and southern Florida over the St. John's River bridge at Jacksonville 41,496 automobiles with "out-of-State licenses," which carried 162,231 passengers, as compared with 35,086 automobiles with 138,287 passengers for the same seven months of 1926, and 27,791 automobiles with 104,358 passengers, for the corresponding period of 1925. It may be of interest to note that during the last three months the number of motor tourists through this Jacksonville gateway into Florida has been nearly double the number passing into the State during the corresponding three months of 1926, which indicates that Florida's appeal to the summer vacationists and motor tourists is greater than ever before.

In conclusion, James B. Nevin of the Atlanta Constitution, giving a portion of his comment on present conditions in Florida, says, as reprinted by the West Palm Beach Post:

"Hundreds of millions of dollars spent by 'outsiders' in Florida—developing and beautifying cities and communities along the coasts and in the lake regions and expanding establishments of one sort

and another—still are there, even if their erstwhile owners aren't. Florida always will be a land attractive to tourists—and there is no town, city, village or community in Florida today that has not at least one beautiful, modern, up-to-date hotel, built, in many instances, by get-rich-quick gentlemen who came, saw—but, failed to conquer!

"It is to laugh—and the last laugh is Florida's. It didn't take long to shake out the small fry and the fly-by-nights; and now that all of the shaking out has pretty well run its course, big and little—look at Florida. There she stands, beautiful, bewitching, even enchanting, with the most glorious climate imaginable and the finest equipment for the delectation and delight of pleasure seekers of any State east of the Rocky Mountains!"

But, Florida is not dependent upon its tourists. It is more than a great health and recreational center. Florida offers unlimited possibilities in the further expansion of its agriculture, which last year added \$88,000,000 to the wealth of the State, while its manufactured output, valued at \$267,000,000, and mineral production, valued at \$16,650,000, as of the census of 1925, further indicate its economic position among the States of the Union. With Florida's fast growing population and a further development of its natural resources, its wealth-creative power in agriculture, industry and commerce will steadily expand.—Manufacturer's Record.

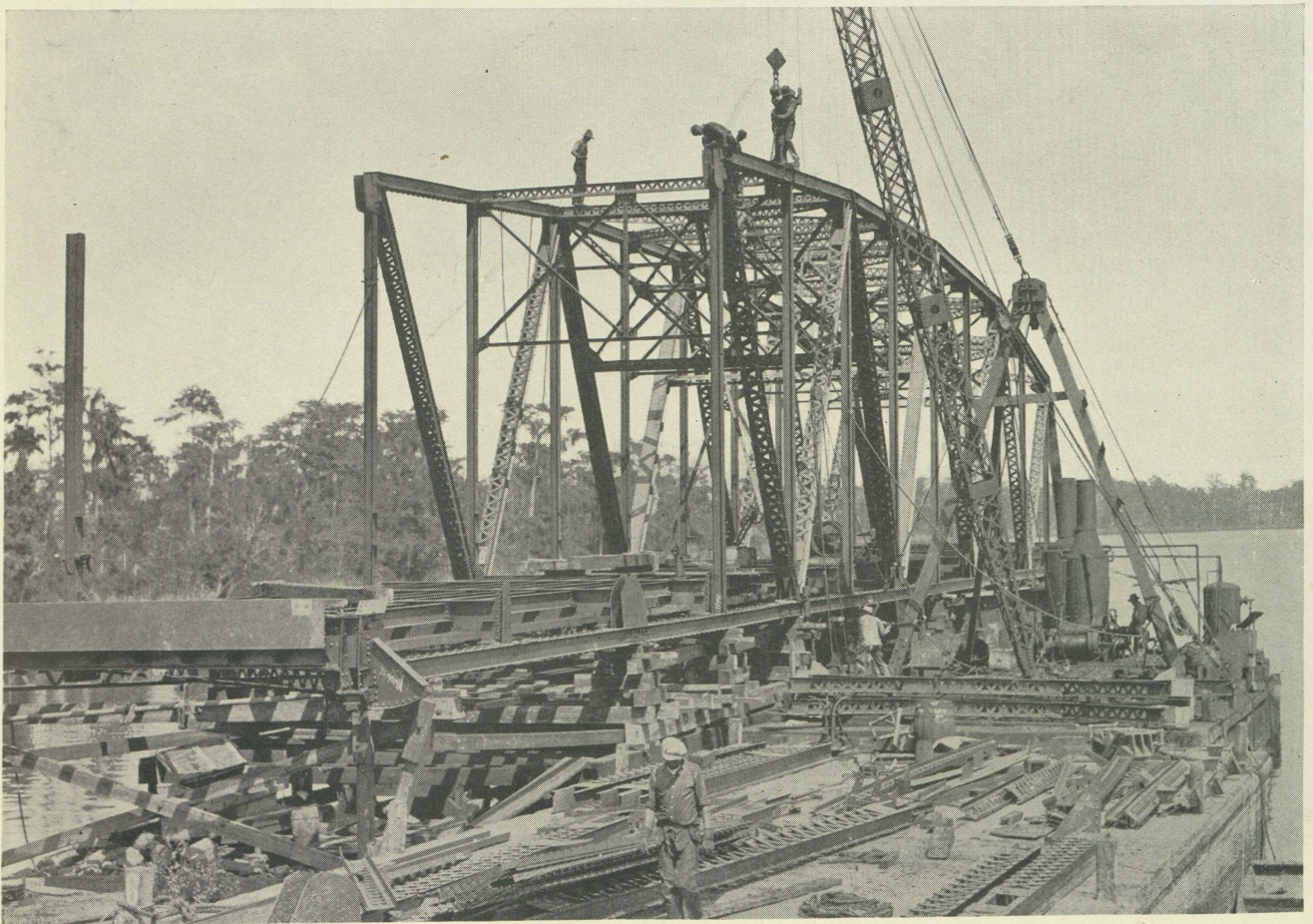
STATE HIGHWAY BONDS.

A nation-wide survey has just been completed by the Bank of America, New York City, into the bonded indebtedness of the several states. This shows that the total bonded debt of all the states amounts to \$1,846,113,578, or \$15.75 per capita. Of this amount, 45.2 per cent was raised for the construction of highways and bridges, the actual amount of outstanding bonds being \$834,467,058.

The largest bonded indebtedness of any one state is that of New York, \$341,059,000, or more than 18 per cent of the total. In per capita indebtedness, however, New York is eighth in the list, the per capita indebtedness being \$30.17. The second largest state indebtedness is that of North Carolina, \$143,392,600, or \$50.17 per capita; while Illinois is third in total indebtedness with \$137,212,500, or \$19.04 per capita. Florida, Nebraska, Kentucky and Wisconsin have no bonded debt. South Dakota leads the list with an indebtedness of \$85.15 per capita, or more than five times the average for all the states.—Public Works.

ONLY TWO WITH NO GAS TAX.

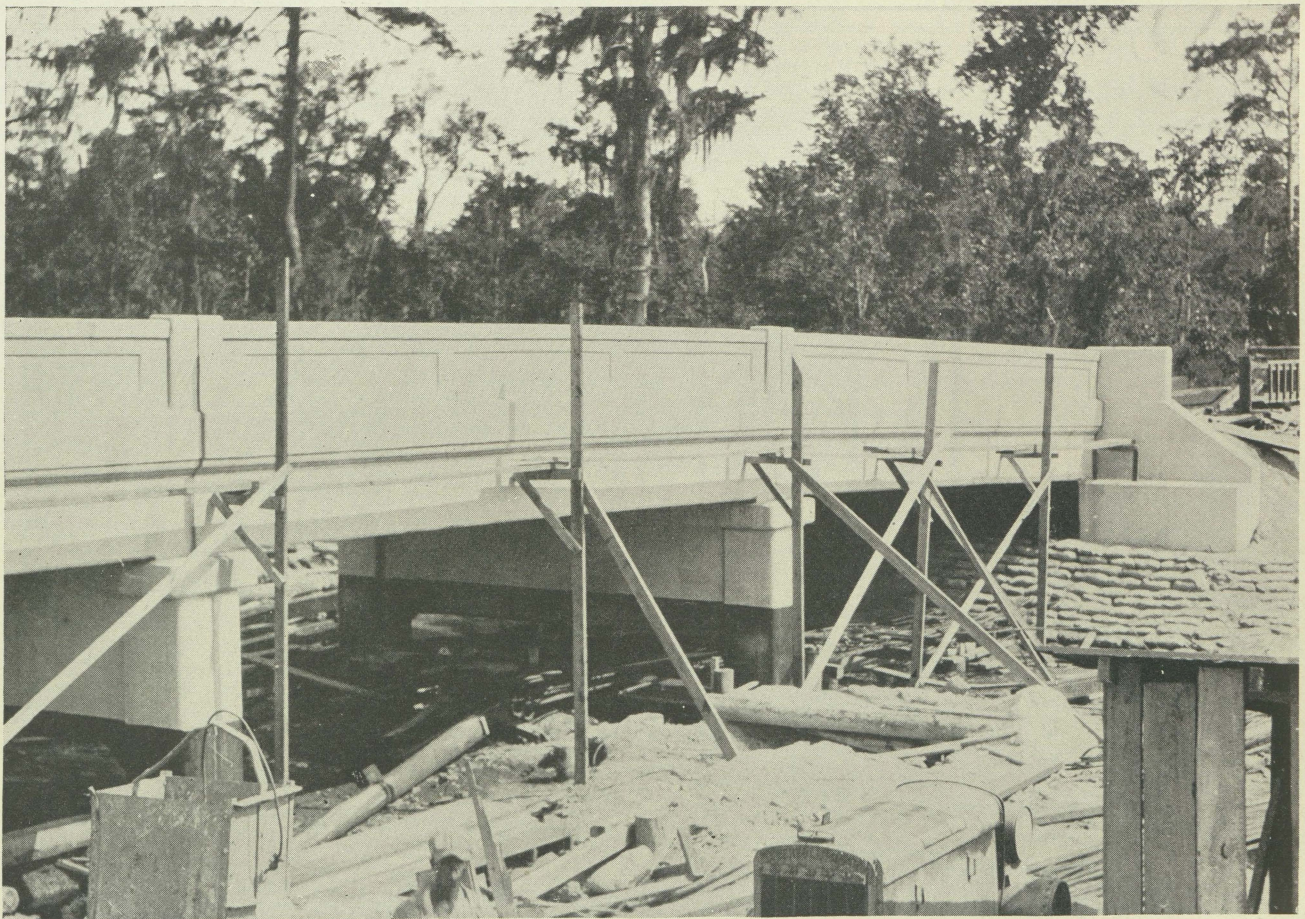
After the State had spent hundreds of thousands of dollars, raised by bond issues and otherwise, on the building of roads, the Illinois Legislature has at last come to the gasoline tax, leaving only two states in the Union, New York and Massachusetts, that have no gas tax.—Kentucky Highways.



St. Mary's River Bridge Connecting Florida and Georgia on Coastal Highway—Road 3—Showing Erection of Steel Swing Span



Road Three, in Crescent City.



Project 421—Bridge Over St. Mary's River, the Line Between Georgia and Florida. This View Shows Three Concrete Spans and the Florida Abutment During Construction.



St Mary's River Bridge on Road No. 3 North of Jacksonville. F. A. Project No. 421.



Between DeLand and Sanford at Lake Monroe.



At Deep Creek, Between Pierson and DeLeon Springs.



Surface-Treated Lime Rock Base, Built by State Forces in Volusia County, Road No. 3.

\$1,000 in Prizes Offered for Highway Safety Suggestions

Prizes totaling \$1,000 were recently offered by the American Road Builders' Association for the best ideas for reducing the number of highway accidents occurring each year. The contest, which is being held in connection with a national safety campaign, is open to everyone. It will close midnight, November 15th.

More than 114,000 persons have been killed and nearly three and a half million injured during the past five years as a result of highway accidents, the association stated in explaining the need of such a campaign. Last year the accident toll was 25,302 killed and 759,060 injured, and the economic loss resulting from accidents was \$638,875,500. The figures have been mounting steadily for five years.

The American Road Builders' Association, which is the world's largest organization representative of the highway industry, has inaugurated its safety drive in an effort to start the accident figures on a downward path. The contest, designed to bring out new ideas for safety, is an important part of the campaign.

First prize in the contest is \$500. There will be nine other prizes, totaling \$500. The awards are offered for "the best workable plan that will decrease street and highway accidents. The plan," the association explains, "may be a complete, comprehensive thesis covering the entire subject or a mere description of a single idea that would contribute to highway safety. The plan must be practical and capable of being put into operation at reasonable expense."

Winners will be announced in the press and by radio January 11, 1928, during the annual convention and road show of the Association in Cleveland, January 9 to 13. A report compiled from the ideas submitted for the contest will be presented to the convention.

ST. ANDREWS BAY CELEBRATES

The other day work officially started on two great bridges that will span St. Andrews Bay, Florida. The occasion, quite properly, was marked by a great celebration, staged at Panama City, with the whole St. Andrews Bay country participating. The two bridges will cost nearly two million dollars, and two such bridges would be well worth celebrating anywhere.

It was "an epochal day in the history of the Bay country," the correspondents say, and the celebration developed into a monster affair, with hundreds of visitors from all over Florida present. There were addresses by a long list of notables, including Dr. Fons A. Hathaway, chairman of the Florida State Highway Department.

There was, naturally, much enthusiasm over the wonderful progress made by Florida in road and bridge building, and Dr. Hathaway and the State Highway Department were the recipients of much well deserved praise.—Industrial Index (Columbus, Ga.)



Project 46. Fernandina Turnout Near Yulee.



Road Three, Between DeLand and DeLeon Springs.

Keeping Costs on Road Maintenance

By H. C. Wilson in "Georgia Highways."

The subject of "Office Cost Records" is one on which volumes might be written if one attempted to go into all the details or touched on every phase of the subject. This article will deal only with the records kept by the division offices of the Ohio Division of Highways which are considered the most important part of the cost keeping because most of the repair and maintenance is supervised from division headquarters.

The cost records are divided nominally into two groups, namely: "Information Records" and "Financial Records." Of these the Financial Records are of greater importance, as all the work is controlled by a budget, a certain amount of money being set aside for each specific purpose. The fact that a state highway department is a money spending organization only, simplifies the cost-keeping job considerably, as there is no need of recording both debits and credits, as does a large manufacturing or sales organization.

Financial Records.

The financial records show at all times how much money has been spent and just how much remains to be spent on a given job. The projects covered by the budget on which financial records are kept are of various kinds. General division charges include route markings, new equipment, supplies and repairs. County charges have similar items. Also there are sectional charges covering such items as surface, roadbed, and other parts of a job.

Whenever it is desired to determine the status of the finances on a particular section, account must be taken not only of the payrolls and invoices which

have actually been paid, but also of the materials ordered, as some of these materials are actually incorporated in the work and must be paid for. Hence the necessity for what is termed a "control account."

The control account is the total of all paid invoices and payrolls, plus any outstanding orders for materials. All immediately contemplated purchases of material appear on this account except those made in the field without a regular departmental order having been issued. For this reason, field orders are kept to an absolute minimum. The control account does not show the actual distribution of charges, but is simply the sum of all charges against a certain division, county, or special account that is operating toward a budget figure that must not be exceeded.

In addition to the general control account a record of actual expenditures must be kept. Upon this ledger is entered the actual amount of payrolls and invoices, a separate account being carried for each section or special charge. Each charge is also distributed to subcharges which are given file numbers and letters. This code distribution shows at a glance whether a new piece of equipment, for instance, was for route marking, surface treatment, or some other purpose.

Information Records.

In keeping the information records or unit cost records there is difficulty in keeping tabulations as systematic and comprehensive as is possible with money expenditures. These records depend largely on the initiative of the various division officers and maintenance superintendents. For example, although the total cost of erecting a piece of guard-rail is

known, the cost per foot is not available unless a record is always kept of the number of lineal feet erected. Then to this cost must be added general charges.

When the absolute cost of any operation is wanted the problem arises of deciding what overhead or miscellaneous charges should be apportioned to this or that particular item. With the great variety of operations performed, it is seen that obtaining absolutely correct unit cost data is impossible. But a well controlled department can figure enough for all practical purposes.

Undoubtedly the distribution of overhead is the most difficult part of keeping a unit cost record. A cost record which does not include overhead is only 50 per cent complete and means little, practically.

The Division of Highways in 1926 has outlined a method of distributing general charge over all items on which unit costs are desired.

It is well to note that the item of superintendence is sometimes neglected in making charges on pay-rolls. One section of work on which considerable money has been spent may have no figure against it for many days of supervision, while another section may have all the superintendent's time. A little more care in allocating personal time on the part of every executive will make costs more accurate.

Accurate Reporting Necessary.

Care in charging requisitions for materials and in distributing charges on invoices is required of everyone, including superintendents themselves, if proper distribution in the office is to be expected. "Office Cost Records" are largely an accumulation of comparatively small charges which are segregated according to the charges made by the superintendent out on the job.

The cost records on maintenance out on the road are largely the result of observation made by superintendents on the cost of typical operations. At the end of each season every superintendent reports his average unit costs for the season for such items as dragging, crushing stone, cutting weeds, and white-washing.

A small discrepancy in the amount charged to any particular item may seem to be of minor importance to the man in the field, but a few moments' consideration will show that in the last analysis it is all these small items added together that make up the millions of dollars the State of Ohio spends annually on maintenance. An accumulated error of 10 per cent would in itself amount to nearly a million dollars.

However, the exact determination of costs on road work never will be possible, as it is in a manufacturing plant engaged in standardized production. The work is too diversified and the same kind of work is never performed twice under identical conditions.

Keeping Tab on Equipment and Stock.

Shop records of the operation and repair costs of motor equipment are probably the most complete of any, as the handling of equipment is a more exact procedure than the handling of materials.

A card index system is used from which any piece of equipment can be located at any time. A card is made out for each piece showing all such details as make, type of body, capacity, and license number. All transfers are recorded on the backs of the cards. If, for instance, a truck is transferred from one



Road 3 as it Runs Through Orange City.

superintendent to another, its card is taken to the new user's file. The card, then, is always in the file of the person charged with the truck.

In addition, a cost record on each piece of equipment is kept which shows at the end of each year the mileage covered, the gallons of fuel and oil consumed, repairs and other operation costs. The fuel record is kept and turned in weekly by the drivers, regardless of whether the equipment is working or not, so as to make the reports complete. Time out for idleness or repairs is also reported in this way. Thus, there are 52 cost cards sent in annually for each piece of equipment, whether it is a pump or an engineer's motor car.

Maintenance has arrived, in many states, to nearly its ultimate importance involving upkeep and repairs to a great mileage that is nearing replacement. Ohio is one of these states, and this important end of highway service has been handled with the accurate keeping of costs that is necessary to the efficiency of any large-scale operation.

So far this season not a single locomotive has been seriously injured by coming into collision with an automobile at a grade crossing.—Chicago Journal of Commerce.

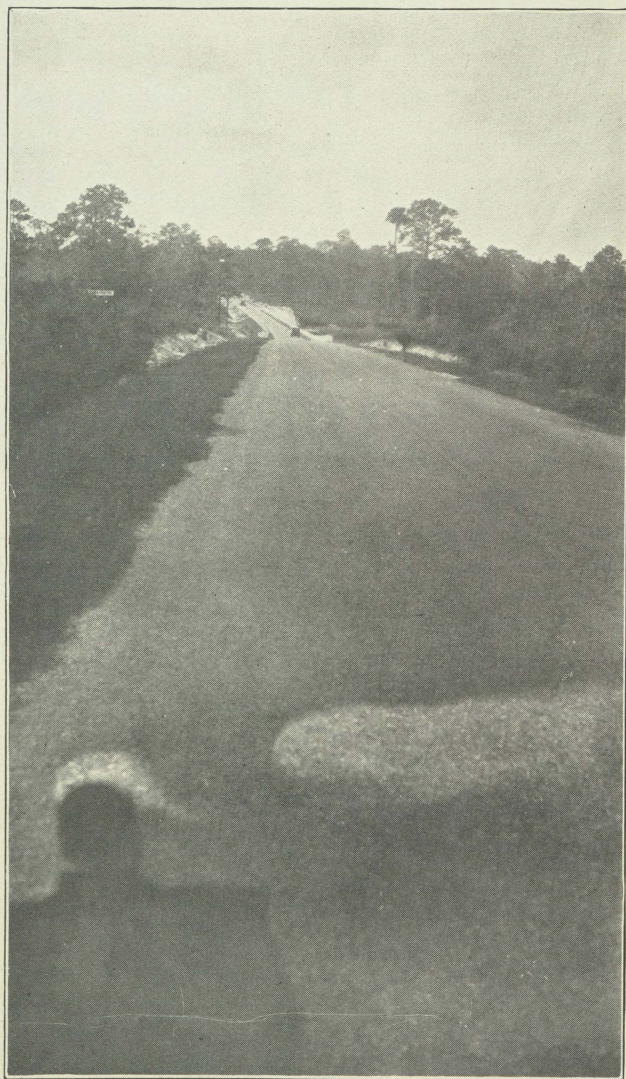
Suppose.

"If all that we say
In a single day,
With never a word left out,
Were printed each night
In clear black and white—
'Twould prove queer reading, no doubt.

And then just suppose,
Ere one's eyes he could close
He must read the day's record through:
Then wouldn't one sigh,
And wouldn't he try
A great deal less talking to do?

And I more than half think
That many a kink
Would be straightened in life's tangled thread,
If one-half that we say
In a single day
Were left forever unsaid."

—Author Unknown.



Road No. 3 Between Orange City and Sanford.

Scotch.

Two Scotchmen entered a contest to determine who could stay under water longer. The bet was a half crown.

Both were drowned.

**ON THE BUILDING OF THE BRIDGES
OVER ST. ANDREWS BAY.**

By Ruth Martin.

How soon these quiet shores with life will teem!
Where now we hear the lap of waves on beach
Hammers will crash; here will the hiss of steam
Affright the birds; here will great engines
screech

Amid the trees where late the wanderer came
On star-lit nights to camp beside this shore,
And where the happy angler sought his game.

Oh, crash and scream and labor mightily!
Let shore touch shore across this tranquil sea!

Where now the sea-grass a dark meadow grows
Pile-drivers will, tomorrow, churn and heave;
And far and deep, where the cool water flows,
Strong men will dive to labor and to leave,
Sunk deep in mire, the concrete roots of trees;
Here giant barges bring strong spans of steel
To rise, at last, a roadway over seas.

Oh, dive and strive, build upward through the
deep!
Let shore meet shore in long, curved leap!

In vision now we see them grow, two links
With a looping chain, to bind and hold
The East to West, the North to South—It sinks
Into the west again, a chain of gold
And gleaming steel that weaves o'er waters
blue,
Through woodland, orange grove, and town;
whereby
The traveler may find scenes fair and new.

Oh, crash and strive and labor without rest!
Bind shore to shore! Bind South to North and
West!

REMOVING HIGH BRIDGE PIERS.

In razing an old covered bridge across the Chattahoochee river at Fort Gaines, Ga., built in 1860, the contractor was required by the U. S. Army engineers to so remove the five brick piers that no material would fall into the river channel. The piers measured 14 by 26 feet at the base and were 75 feet high. A dynamite expert was consulted and in accordance with his instructions three gopher holes were driven by hand approximately half way through the base of each pier; then a single hole was drilled in each corner and also into the supporting centers, and 40 pounds of dynamite placed in each pier, primed with electric blasting caps and fired one after another. In each case the piers were overthrown in such a way that practically no debris was thrown into the river channel.—Public Works.

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Absent-minded Prof.—"I can't see him. Tell him I'm sick."

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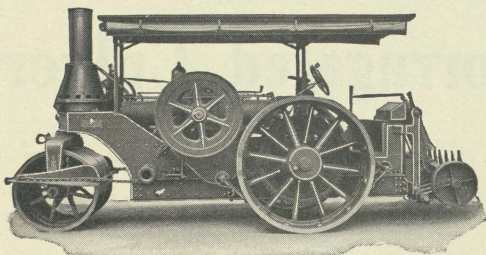
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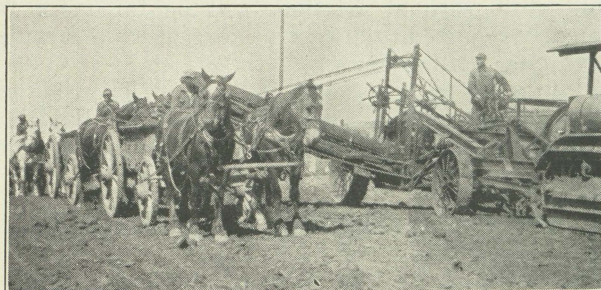
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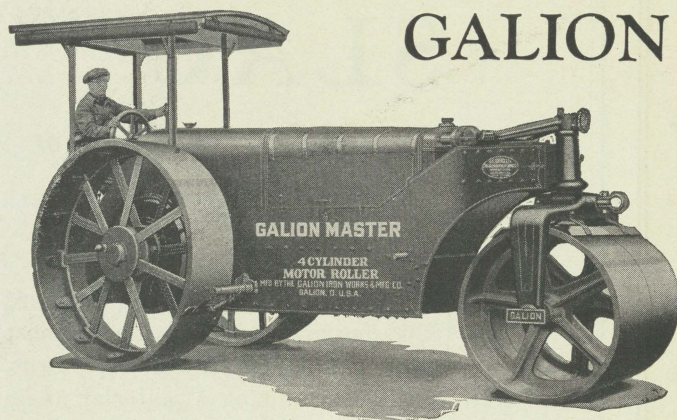
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Write for Illustrated Catalog.

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100 West Amelia Ave., Orlando, Fla.

EDUCATION OF ENGINEERS (Continued from page 4)

"The gist of this correspondence was that the training is apt to be too theoretical and not sufficiently practical, and, of course, the contrary was also maintained. As usual, there is a good deal of truth in both aspects of the question, but it cannot be too strongly emphasized that the young engineer should not neglect the practical side for the purely theoretical. He will find when he takes up a chief appointment that a knowledge of common or garden office work, such as filing systems, the ability to write or dictate a clear and concise letter, to tot up a lengthy column of pounds, shillings and pence and get it right, to be able to estimate roughly the cost of a job without going into details, and perhaps above all the knack of getting the best out of men and staff without friction, will be far more frequently required than abstruse engineering formulae or higher mathematics.

"I do not wish to be misunderstood. The time will come when he will need all his theory, but he is certain to need the practical or business side first and most frequently."—Public Works.

ANOTHER CALIFORNIA EXPERIMENTAL PAVEMENT.

A test concrete road was built at Pittsburg, Calif., in 1921, through the cooperation of various private parties interested in highways and highway materials, and tested by the Bureau of Public Roads and the California Highway Commission. (See "Public Works" for October and December, 1921, January and February, 1922, and April, 1923.) One of the conclusions reached was the advantage of the thickened edge, which already had been adopted by California in 1912 as an alternate type, by Arizona a few years later and by Illinois in 1922. Another conclusion was the necessity for the greatest possible smoothness of surface.

This year another test concrete road has been built in California, of much greater length than the former, and with the difference that this one is built and is being used for every-day highway traffic. Also, it was built by the State Highway Department. Another difference is that, while the Pittsburg road was made with 4-inch and 5-inch thicknesses, the Oxnard road has center thicknesses of 6 and 7 inches.

Among the details which have been varied in the different sections to permit comparison are the spacing of expansion joints and weakened planes, types of reinforcement, and methods of placing reinforcement. These variations are combined in different ways in thirty-eight sections.

Although traffic on this road is said to be heavy, it contributes undoubtedly but a fraction of the intensive wear to which other test roads have been subjected, and the time that must elapse before judgments can be formed will accordingly be many times longer. On the other hand, the traffic is real and not artificial, the pavement will be subjected to climatic changes of several winters and summers, and the conclusions reached may be accepted with more confidence.—Public Works.

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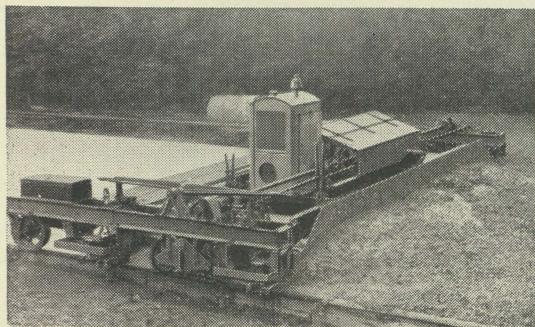
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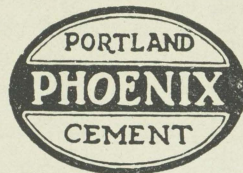
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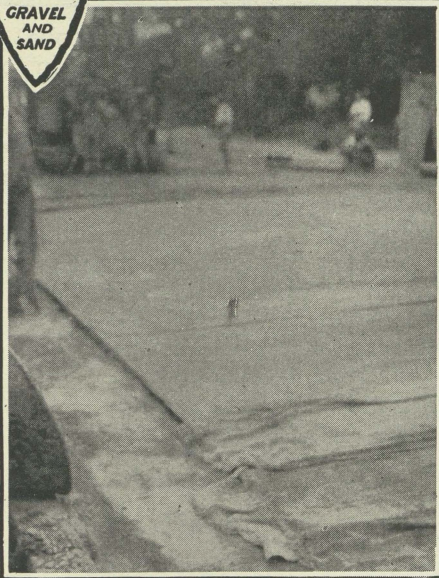
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Contracts Awarded by State Road Department January 1st, 1927, to September 16th, 1927

Contractor—	Project No.	County—	Length Miles	Length Feet	Contract + 10 %	Type
Noonan-Lawrence	54	Leon	13.00	—	385,297.67	Concrete.
Higgison Const. Co.	59	Leon-Jefferson	9.10	—	266,053.37	Concrete.
Duval Engr. & Contr. Co.	54-A & 58	Leon-Jefferson	12.53	—	264,524.48	R. B. S. T.
Manley Construction Co.	53-A	Lake	7.10	—	249,034.28	Asph. Conc.
W. J. Bryson Paving Co.	52	Escambia	10.089	—	241,904.49	C. G. & G.
Boone & Wester	677-C	Levy	10.16	—	224,345.88	C. G. & G.
Thompson & Moseley, Inc.	677-D	Levy	7.58	—	66,017.34	C. G. & G.
Lake Worth Const. Co.	683-C	Palm Beach	8.27	—	44,290.95	C. G. & G.
B. Booth & Co.	687-B	Lake	15.22	—	89,496.93	C. G. & G.
C. T. Dawkins	50-A	Putnam	—	120	22,243.32	Conc. Overh'd.
Okeechobee Const. Co.	655-667	Highlands	—	815	50,006.45	Timber.
C. H. Turner Co.	697	Escambia	—	488	22,911.53	Timber.
Duval Engr. & Contr. Co.	571	Madison	14.26	—	47,190.03	S. T.
Langston Const. Co.	660	Clay	10.52	—	33,538.07	S. T.
H. E. Wolfe	48	St. Johns	15.39	—	371,253.82	R. B.
Nelson Brothers	694	Martin	8.48	—	275,185.30	Concrete.
Johnson, Drake & Piper	693	St. Lucie	8.93	—	312,662.92	Concrete.
Concrete Steel Bridge Co.	665	Clay	—	1400	208,167.96	Concrete.
Concrete Steel Bridge Co.	664	Clay	—	1600	236,366.90	Concrete.
Royce Kershaw, Inc.	640-B	Martin	—	131	32,201.40	Concrete.
F. M. Stuart & Co.	40-B	Brevard	—	108	40,149.91	Concrete.
Langston Const. Co.	641	Palm Beach	9.67	—	188,279.21	R. B.
Samuel Vadner	695	Lake	10.50	—	63,734.69	C. G. & G.
Tampa Sand & Shell Co.	695	Lake	—	—	63,368.28	Hyd. Fill.
R. C. Huffman Const. Co.	669-D	Dade	12.30	—	382,038.36	C. G. & G.
Dean, Yarborough & Ebersbach	685	Franklin	17.43	—	159,980.86	C. G. & G.
Wm. P. McDonald Const. Co.	648	Hardee	7.14	—	24,075.97	S. T.
L. M. Gray	676-A-B	Levy	24.35	—	80,637.57	S. T.
West Construction Co.	614	Sarasota	17.34	—	483,586.35	Bit. Conc.
Manley Construction Co.	687-A	Lake	15.00	—	436,551.76	Sheet Asphf.
M. C. Winterburn, Inc.	543	Seminole	14.20	—	405,296.30	Bit. Mac.
Wm. P. McDonald Const. Co.	648	Hardee	6.36	—	123,804.83	R. B. S. T.
Duval Engr. & Contr. Co.	659	Clay	2.80	—	49,310.97	R. B. S. T.
C. A. Steed & Sons Co.	668	Brevard	13.45	—	373,640.32	R. B. S. T.
Stidham & Hughes	564-C	Charlotte	3.93	—	81,173.55	R. B. S. T.
H. L. Clark & Sons Co.	676-C	Levy	15.01	—	227,110.22	R. B. S. T.
F. X. Bradley & Co.	573-D	Orange	16.81	—	95,642.25	C. G. & G.
C. A. Henderson	713	Columbia	10.00	—	85,284.71	C. G. & G.
James Betteridge	41-B	Dade	—	88	42,387.84	Concrete.
Peterson & Earnhart	698	Leon	—	400	34,773.06	Concrete.
Peterson & Earnhart	699	Jefferson	—	300	27,441.17	Concrete.
John J. Quinn, Inc.	641	Palm Beach	1.00	—	52,494.31	S. T.
Board Co. Comms., Taylor Co.	745	Taylor	14.00	—	12,320.00	C. & G.
Finlayson & Morris	747	Jefferson	6.50	—	40,566.79	C. G. & G.
C. S. Maulsby	694	Martin	—	—	10,780.00	Protection.
Kibbey Engineering Co.	663 679	Citrus-Hernando	15.00	—	19,145.28	Guard Rail.
Alexander, Ramsey & Kerr	669-E	Dade	4.27	—	205,700.00	C. & G.
Langston Constr. Co.	522	Nassau	4.06	—	43,394.76	R. B. S. T.
W. J. Bryson Paving Co.	593	Manatee	0.66	—	12,058.22	Bit. Conc.
E. W. Parker	589	Lee	—	313	43,942.63	Concrete.
Murphy & Pryor	691	Indian River	—	285	60,594.05	Conc. Overhead.
Hayes & Kroeger	687-A	Lake	—	120	18,264.37	Conc. Overhead.
E. W. Parker	614	Sarasota	—	165	50,330.50	Conc. Bridge.
E. W. Parker	614	Sarasota	—	150	61,320.42	Conc. Bridge.
E. W. Parker	614	Sarasota	—	130	53,530.89	Conc. Bridge.
E. W. Parker	614	Sarasota	—	130	68,210.17	Conc. Bridge.
Cone Bros. Const. Co.	49	Flagler	13.81	—	252,196.06	R. B. S. T.
Fowler & Banko, Inc.	691	Indian River	5.52	—	165,364.35	Concrete.
Fowler & Banko, Inc.	692	St. Lucie	7.38	—	229,002.48	Concrete.
General Const. Co.	41-B	Dade	—	132	40,529.06	Conc. Bridge.
F. X. Bradley & Co.	716	Bradford	11.12	—	57,024.85	C. G. & G.
F. X. Bradley & Co.	717	Bradford	10.93	—	85,834.62	C. G. & G.
L. M. Gray	50-B	Putnam	9.77	—	158,820.99	R. B. S. T.
N. C. Cash	50-C	Putnam	10.03	—	178,026.92	R. B. S. T.
C. R. Scott	619	Alachua	9.28	—	134,370.72	R. B. S. T.
Higgison Const. Co.	6	Madison	5.45	—	47,471.46	C. G. & G.
W. J. Bryson Paving Co.	55	Alachua	16.77	—	142,280.00	C. G. & G.
Harrison & Estes	697	Escambia	.14	—	9,013.01	C. G. & G.
Franklin Const. Co.	706-A	Putnam	12.09	—	83,567.57	C. G. & G.
W. J. Bryson Paving Co.	714	Union	10.20	—	67,006.89	C. G. & G.
Sellers Const. Co.	715	Alachua	3.20	—	20,752.62	C. G. & G.
Little & Lee, Contractors	742	Alachua	7.65	—	39,762.96	C. G. & G.
Johnson, Drake & Piper	680	Bay	—	4000	829,392.71	Conc. & Steel.
Johnson, Drake & Piper	681	Bay	—	7530	1,119,966.46	Conc. & Steel.
F. W. Simpson	764	Suwannee	12.00	—	55,773.19	C. G. & G.
F. W. Simpson	765	Suwannee	7.00	—	30,428.89	C. G. & G.
Duval Engr. & Contr. Co.	677-A	Levy	6.96	—	88,648.38	R. B. S. T.
W. J. Bryson Paving Co.	53-B	Lake	—	570	96,431.98	Conc. Bridge.
C. G. Kershaw Contr. Co.	719	Suwannee	8.57	—	40,355.35	C. G. & G.
American Bascule Bridge Corp.	53-B	Lake	—	—	16,471.40	Bascule.
Nashville Bridge Co.	685-B	Franklin	—	120	16,183.45	Steel Span.
N. B. Burton	677-D	Levy	3.05	—	15,827.95	C. G. & G.
Carl Fay	668	Brevard	—	—	7,326.00	C. G. & G.
Peterson & Earnhart	698-B	Leon	—	110	4,689.08	Overhead Timber.
Barnes Construction Co.	518	Lafayette	17.75	—	122,259.23	G. G. & G.
L. B. McLeod Const. Co.	535	Lafayette	13.19	—	68,103.35	C. G. & G.
L. B. McLeod Const. Co.	624	Hamilton	6.23	—	36,841.61	C. G. & G.
Curry & Turner	706-B	Putnam	14.91	—	68,419.63	C. G. & G.
Hardee-Fisher Co., Inc.	708	Jefferson	7.98	—	64,781.26	C. G. & G.
Hardee-Fisher Co., Inc.	720	Jefferson	9.64	—	62,028.84	C. G. & G.
L. B. McLeod Const. Co.	723	Leon	11.76	—	91,031.05	C. G. & G.
A. E. Campbell	763	Suwannee	12.23	—	35,291.76	C. G. & G.
Peterson & Earnhart	6-B	Madison	—	297	58,579.56	Conc. Bridge.
Peterson & Earnhart	700-B	Jefferson	—	496	64,333.54	Conc. Bridge.
N. S. Golden	669XZ	Collier	—	600	8,801.65	Timber Bridge.
W. M. Hartin	593	Manatee	—	—	7,012.50	Remove Bridge.
Total			656.79	20,598	\$12,383,617.04	



27 Solid Blocks of Concrete Paving

Photo shows one of twenty-seven city blocks in Demopolis, Ala., being paved with Arrowhead Concrete by the Walter J. Bryson Paving Co. (Jacksonville).

In all of this paving (end to end a concrete highway more than 2 1-3 miles long)

Arrowhead Sand and Gravel

are being used exclusively. Already the paving on 19 blocks has been completed and is serving traffic. And, again, Arrowhead aggregates have produced concrete of unusual strength.

Concrete for permanence — Arrowhead for high test concrete! That is more than a slogan. It is a statement that checks true on every concrete job in which Arrowhead aggregates are used.

MONTGOMERY GRAVEL COMPANY

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PLANTS
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NORTHWEST ENGINEERING CO.—Cranes, Shovels
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PAGE ENGINEERING CO.—Dragline Buckets.

OWEN BUCKET CO.—Clam Shell Buckets.

DOMESTIC ENGINE & PUMP CO.—Diaphragm,
Centrifugal, and Force Pumps, Hoisting En-
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AMERICAN STEEL & WIRE CO.—Wire Rope.

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FOOTE COMPANY, INC.—Pavers.

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KOHLER COMPANY—Light Plants.

LAKEWOOD ENGINEERING COMPANY—Concrete
Placing Equipment, Finishing Machines,
Mixers, Industrial Cars, Track, Etc.

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Goods in the Southeast.**

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The Keuffel & Esser Co.

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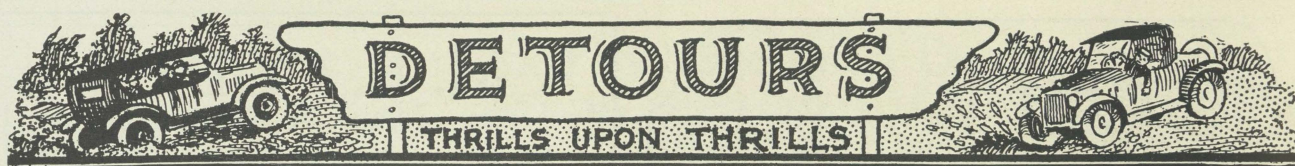
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and many other concerns manufacturing goods
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Write for Samples, Prices, Catalogs

**TECHNICAL BOOKS
EVERYTHING FOR THE OFFICE
PRINTING—LITHOGRAPHY—ENGRAVING**



Irene Thomas, pretty typist,
Really made a hit
With her new boss, Dave A. Mayer,
But she had to quit
When he noticed on each letter,
She had signed—DAM-IT.
—Kentucky Highways.

A balky mule has four-wheel brakes.
A billy goat has bumpers.
The firefly is a bright spotlight.
Rabbits are puddle jumpers.
Camels have balloon-tired feet,
And carry spares of what they eat;
But still I think that nothing beats
The kangaroos with rumble seats.
—Kentucky Highways.

Had no Tex Rickard.
In days of old when knights were bold,
They had some goodly fights,
But they were dumb, they never sold,
Their moving picture rights.
—Reserve Red Cat.

Rocky Job.
Boss—"Rastus, you good for nothing scamp,
where have you been loafing all day? Didn't I tell
you to lay in some coal?"
Rastus—"Yassuh. Ah's been layin' in de coal all
day, tho dere is lots of softer places whar Ah'd
ruther lay."—Boys' Life.

Wasting Gas.
Little George, the garage mascot, was visiting his
aunt. He found the cat in a sunny window purring
cheerfully.
"Oh, Auntie, come quick," said little George, "the
cat has gone to sleep and left his engine running."
—Annapolis Log.

Instalment paying makes the months shorter and
the years longer.—Toledo Blade.

At man's birth his mother is the important char-
acter; at his marriage the bride is; at his death the
widow.—Duluth Herald.

Slightly Used.
"We got a new baby at our house."
"Didya turn in the old one?"—Pomona Sagehen.

Culinary Note.
It was reported later that her husband was on his
way to the Hall of Justice to boil her out.—San
Francisco Examiner.

According to a Chicago astronomer, the sun is
likely to explode at any minute. We've felt for a
month or so that something was the matter with it.
—Macon Telegraph.

Handy Wardrobe.
"I have a suit for every day in the week."
"Yes?"
"This is it."—Blue Dragon.

Statistician says that every fifth person in the
United States owns an automobile, but what he
means is that every fifth person in the United States
will own an automobile if he ever gets it paid for.—
Macon Telegraph.

It is claimed that the death-rate is getting lower
all the time. But they will have to get people to
live longer if all those new cars are to be paid for.
—Des Moines Tribune.

Should the occasion ever arise, President Coolidge
could do character parts on the stage. He looked
just as much like an Indian as he did a cowboy.—
Louisville Times.

It is said that the female crab has one million
young at birth. No wonder the father crab's eyes
stick out so far.—Punch.

Every man should remember that it is much easier
to live within an income than to live without one.—
Louisville Times.

Nowadays every man is entitled to life, liberty
and an automobile in which to pursue happiness.—
Norfolk Virginian-Pilot.

A 100 per cent optimist is a man who believes the
thinning out of his hair is only a temporary matter.
—Louisville Times.

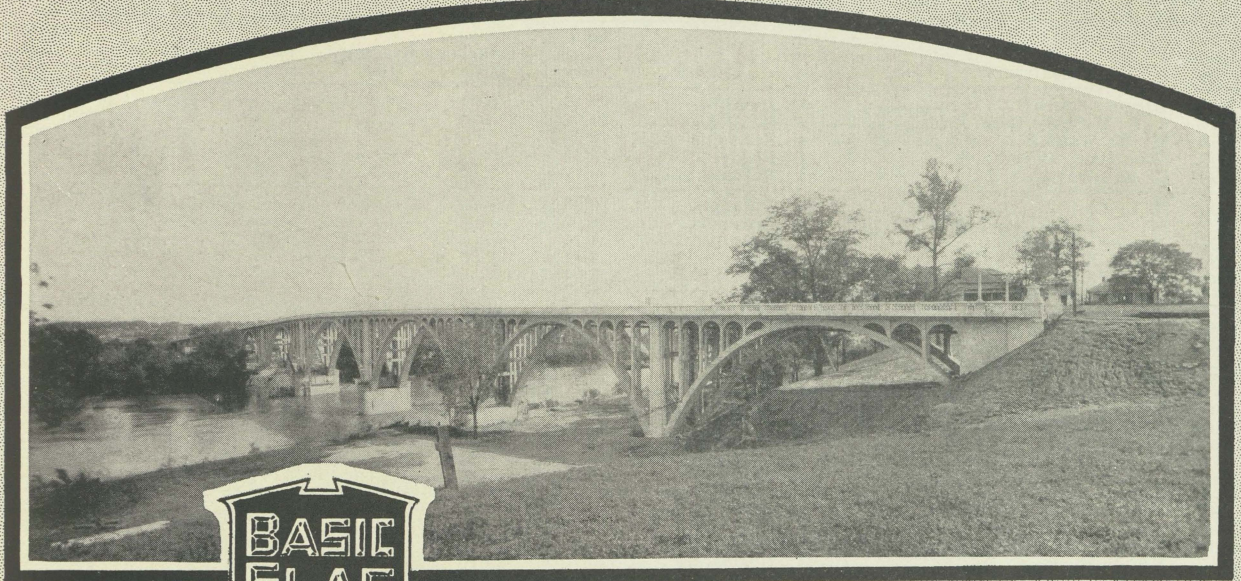
Yale professor has found a hundred-foot worm.
The early bird who gets this will want help instead
of congratulations.—Honolulu Star-Bulletin.

The way things have been going this year, it
wouldn't surprise us a bit to hear of a disastrous
flood in the middle of the Sahara.—Nashville Banner.

The good old girls of our set labor passionately
to keep that schoolgirl complexion, but what we
long for with an unutterable longing is that school-
boy stomach.—Ohio State Journal.

Line Forms on the Right.
Have position open for typist. Would prefer one
who can take dictation. Salary \$90,000 per month.
—Ad in the Galveston News.

Quick! An Antidote.
Druggist's Assistant—"Good Lord—I just made
an awful mistake!"
Druggist—"Wh-what'd you do?"
Assistant—"Gosh, I put up four pimento sand-
wiches on white bread for a fellow that always
wants them on rye."—Judge.



Another reason why the BIG Bridge jobs are Slag Concrete jobs

The Alabama Highway Commission, and especially H. H. Houk, its Bridge Engineer, have been widely congratulated on this beautiful concrete bridge that spans the Coosa River at Gadsden. It is 1400 ft. in length and consists of twelve two-ribbed open spandrel

"ENSLEY" & "ALA CITY"
BASIC SLAG
CRUSHED & SCREENED

concrete arches which vary in length from 64 ft. to 155 ft. Traffic is carried over on a 27-ft. wide highway. A five-foot sidewalk on each side serves pedestrians.

The Coosa River Bridge is the longest modern concrete bridge in Alabama. All of the materials used in its construction were produced in Alabama—the cement from one of the great mills in Birmingham—the Basic Slag from our plant at Alabama City—the sand from our subsidiary, Montgomery Gravel Company at Montgomery. The completion of this magnificent bridge by the Kershaw Contracting Co. (B'ham) marks another important chapter in the history of slag-built highways and bridges serving the Southeast.

BIRMINGHAM SLAG CO.

Slag Headquarters for the South

ATLANTA BIRMINGHAM JACKSONVILLE
THOMASVILLE MONTGOMERY OCALA FLA

Status of Construction

THROUGH JULY 31st, 1927

Proj. No.	Contractor.	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Per Cent Complete
6	Higgison Const. Co.	1	Madison	5.45	0.00	0.00		Graded	0.00
47	J. B. McCrary Engr. Corp.	4	St. Johns	14.96				14.96 Concrete	96.00
48	H. E. Wolfe	4	St. Johns	15.94			15.94	6.38 S.T.R.B.	95.00
49	Cone Bros. Const. Co.	4	Flagler	13.82			4.84	0.00 S.T.R.B.	27.00
50-B	L. M. Gray	14	Putnam	9.77			1.17	0.00 S.T.R.B.	8.30
50-C	N. C. Cash	14	Putnam	10.03			.50	0.00 S.T.R.B.	2.50
52	W. J. Bryson Paving Co.	1	Escambia	10.09	7.06	5.04		Graded	57.00
53-A	Manley Const. Co.	2	Lake	7.10			7.11	Bit.Conc.	99.50
53-C	Tampa Sand & Shell Co.	2	Lake	1.87	1.83	1.72		Graded	68.00
54	Noonan-Lawrence	1	Leon	13.00				9.10 Concrete	65.00
55	W. J. Bryson Paving Co.	14	Alachua	16.77	0.00	0.00		Graded	0.00
58	Duval Engr. & Const. Co.	1	Leon-Jefferson	12.54			12.54	S.T.R.B.	93.00
59	Higgison Const. Co.	1	Jefferson	9.10				9.10 Concr.	100.00
502	State Convict Forces	10	Gulf	6.94			6.59	0.00 S.T.R.B.	85.59
543	M. C. Winterburn, Inc.	3	Seminole	14.20			8.40	0.00 Bit.Mac.	31.56
564-C	Stidham & Hughes	5	Charlotte	4.11			4.11	S.T.R.B.	100.00
573-D	F. X. Bradley & Co.	2	Orange	16.81	16.81	15.29		Graded	90.00
580	State Convict Forces	19	Dixie	16.50	16.50	16.50	16.50	S.T.R.B.	95.00
587	C. G. Kershaw Const. Co.	5-A	Columbia	4.38	4.38	4.34		Graded	98.48
592	U. S. Fidelity & Guaranty Co.	10	Franklin	7.89	7.49	7.10		Graded	93.00
614	W. J. Bryson Paving Co.	5	Sarasota	17.34	17.34	15.61		Graded	95.00
614	West Construction Co.	5	Sarasota	17.34			8.84	0.00 Bit.Conc.	25.00
619	C. R. Scott	5	Alachua	9.28			1.39	0.00 S.T.R.B.	17.00
621	Penton-Mathis Const. Co.	1	Okaloosa	19.70	19.70	19.70		Graded	100.00
623	State Convict Forces	35	Madison	12.91	12.91	12.91		Graded	100.00
640-A	S. J. Groves & Sons Co.	4	Martin	9.00	9.00	8.91		Graded	99.00
640-B	Lake Worth Const. Co.	4	Martin	11.80	11.80	8.85		Graded	82.50
641	Langston Const. Co.	4	Palm Beach	11.90			11.66	1.07 S.T.R.B.	85.00
648	Wm. P. McDonald Const. Co.	2	Hardee	6.36			6.36	S.T.R.B.	100.00
651	State Convict Forces	10	Gulf	14.72		Not reported.		S.T.R.B.	
653	H. D. Spangler	4	Broward	13.46	12.78	9.42		Graded	82.80
657	State Convict Forces	6	Jackson	10.00	10.00	10.00		10.00 S. Clay	100.00
659	M. C. Winterburn, Inc.	3	Clay	13.27	13.27	10.48		Graded	83.00
668	C. A. Steed & Sons Co.	4	Brevard	13.45			7.40	0.00 S.T.R.B.	43.00
669-C	R. C. Huffman Const. Co.	27	Dade	12.00	12.00	8.04		Graded	65.00
669-D	R. C. Huffman Const. Co.	27	Dade	12.30	6.15	3.08		Graded	27.00
669-E	Alexander, Ramsey & Kerr	27	Dade	4.55	4.55	4.55		Graded	75.00
669-W	State Convict Forces	27	Collier	16.00	16.00	16.00	13.00	0.00 S.T.R.B.	85.00
671	State Convict Forces	20	Jackson	4.07	4.07	3.87		Graded	96.82
673	State Convict Forces	1	Gadsden	14.87	14.87	14.87		14.87 S. Clay	100.00
676-B	L. M. Gray	19	Levy	14.39			14.39	S.T.R.B.	100.00
676-C	Langston Const. Co.	19	Levy	15.02	15.02	15.02		Graded	100.00
676-C	H. L. Clark & Sons Co.	19	Levy	15.02			11.86	0.00 S.T.R.B.	61.00
677-A	Duval Engr. & Contr. Co.	13	Levy	6.96		0.00	0.00	S.T.R.B.	0.00
677-B	Coastal Const. Co.	13	Levy	11.58	11.12	11.12		Graded	99.00
677-C	Boone & Wester	13	Levy	10.16	10.16	2.54		Graded	55.00
677-D	Thompson & Moseley, Inc.	13	Levy	7.58	7.58	5.30		Graded	85.00
677-D	N. B. Burton	13	Levy	3.05	0.00	0.00		Graded	0.00
683-C	Lake Worth Const. Co.	4	Palm Beach	9.16	8.61	6.78		Graded	80.00
685	Deen, Yarborough & Ebersbach	10	Franklin	17.43	14.77	7.94		Graded	54.00
687-A	Manley Const. Co.	2	Lake	15.00			14.55	S. A.	62.00
687-B	B. Booth & Co.	2	Lake	15.22	15.22	14.18		Graded	90.87
691	Fowler & Banko, Inc.	4	Indian River	5.52				0.00 Concrete	0.00
692	Fowler & Banko, Inc.	4	St. Lucie	7.38				1.77 Concrete	22.50
694	Nelson Brothers	4	Martin	8.84				8.27 Concrete	98.00
695	Samuel Vadner and Tampa Sand & Shell Co.	2	Lake	10.54	10.22	7.38		Graded	66.50
698	Curtis & Gubbins	19	Leon	12.43	10.31	9.69		Graded	78.76
699	State Convict Forces	19	Jefferson	7.71	7.71	7.00		Graded	82.00
700	State Convict Forces	19	Jefferson	9.26		Not reported.		Graded	
706-A	Franklin Const. Co.	28	Putnam	12.09	2.96	.71		Graded	7.00
713	C. A. Henderson	28	Columbia	10.00	8.40	3.90		Graded	61.20
714	W. J. Bryson Paving Co.	28	Union	10.20	0.00	0.00		Graded	0.00
715	Sellers Const. Co.	28	Union	3.20	1.11	0.00		Graded	3.60
716	F. X. Bradley & Co.	28	Bradford	11.12	4.45	1.11		Graded	11.10
717	F. X. Bradley & Co.	28	Bradford	5.47	5.47	1.09		Graded	16.90
719	C. G. Kershaw Contr. Co.	5-A	Suwannee	8.57	0.00	0.00		Graded	0.00
728	State Convict Forces	10	Leon	11.65	3.37	0.00		Graded	3.00
740	State Convict Forces	10	Gulf	9.63	7.70	2.89		Graded	26.00
742	Little & Lee	13	Alachua	7.65	0.00	0.00		Graded	0.00
743	State Convict Forces	10	Bay	18.25	3.46	3.10		Graded	11.00
745	State Forces, and Taylor County	19	Taylor	14.00	3.19	.95		Graded	5.30
747	Finlayson & Morris	35	Jefferson	6.50	3.90	3.18		Graded	42.00
764	F. W. Simpson	50	Suwannee	12.00	1.92	.24		Graded	2.00
765	F. W. Simpson	50	Suwannee	7.00	0.00	0.00		Graded	0.00
770	State Convict Forces	22	Brevard	9.00		Not reported.		Graded	
786	State Convict Forces	52	Jackson	6.76	1.35	1.35		Graded	15.87
Total Complete July 31st, 1927				2126.95	2051.81	987.15	1550.53		
Complete Month of July				43.74	43.05	31.82	28.83		
Total Complete June 30th, 1927				2083.21	2008.76	955.33	1521.70		

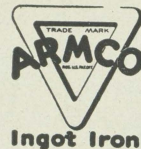
TOTAL MILEAGE COMPLETE

	Concrete	Brick	B. C.	S. A.	B. M.	Asph. Block	S.T.R.B.	S. C.	Marl	Total
Complete to June 30, 1927	219.89	17.13	22.00	84.92	88.84	23.20	713.78	417.11	27.58	1608.83
Complete Month of July	6.83		1.81				23.47	1.30		33.41
Complete to July 31, 1927	226.72	17.13	23.81	84.92	88.84	23.20	737.25	418.41	27.58	1642.24



Armco Corrugated Culverts at the Venice (Florida) Golf Course.

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Corrugated Culverts

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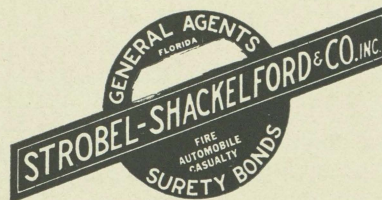
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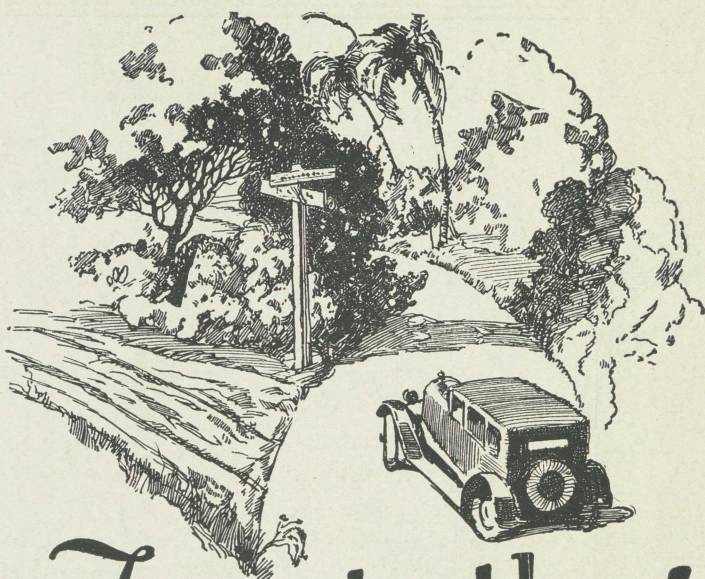
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JACKSONVILLE, FLA.



Turn to the *Right!*

POPULATION has always followed the trail-blazer. He marks the road! The more roads, the easier population had found it to follow, always, you have noticed, taking the best road to its destination. For good roads are symbols of progress.

Judge by your own opinion, your own experience, which communities and which population territories have prospered most—and have prospered first! Those with good roads, or those with bad? Which farms command the higher values? Which towns and cities attract the most trade—those which make it easy to get in, with good roads; or those which lay obstacles in the way of the traveler with unpaved roads, roads in disrepair, roads which are dangerous with ruts and holes, which make traveling tedious and irritate the temper of the traveler.

Purchasers fail to buy freely when annoyed by bad roads. Merchants lose possible sales, community progress is checked—indeed, many cities and towns lose close-by trade, because other cities have laid good roads in the other direction!

Lime Rock base roads bring money into town, increase property values and invite the traveler to stay.

When highway builders select Lime Rock they select an unsurpassed material.

With a well laid surface and proper drainage, Lime Rock represents the most economical base Florida communities can choose—low first cost; low labor cost in construction; approved both by the Government and the foremost testing laboratories, long-lasting in service.

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